

Subject: Re: Mesh patent draft (.doc document attached)

From: olivier clarisse <clarisse@lucent.com>

Date: Tue, 09 May 2000 14:21:56 -0500

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← *date*

Jim,

Attached is an update to the Mesh document (for patent submission) you provided.

Olivier

Mesh_Virtual_Direct_Connect_Network2.doc

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Virtual Direct Connect Network

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Background

In traditional phone networks there are always requirements for special arrangements to serve rapid connections. These include hot line or direct connect features that connect to a particular number as soon as the phone is taken off hook. Other arrangements are used in defense networks providing special purpose lines and connection that are never released. Another arrangement is used in custom stock brokerage systems using phones with multiple call appearances, where a broker can call the trading floor before the market opens and leaves the connection up until the market closes. The common need in all of these arrangements is to be able to talk to the party on the other end without delay such as dialing and routing.

The problem with such services is that the long holding times can cause blocking for typical customers. To engineer special switching equipment for these types of networks is very expensive, but is often done because of the cost of delay (missed stock trade, late missile launch, etc).

Invention

An advance in the art is accomplished by providing an extension to packet voice protocols such as H.323 or SIP that allows a packet voice/data network that supports multiple virtual connections between each phone as shown in figure 1.

Figure 1: Mesh Phone Arrangement

Such an arrangement can be established manually by dialing multiple connections or by a computer using a database of telephone numbers and connection details that allows it to signal the network to establish the required connections. Such a network can be overlaid on any packet network without large cost since the connections may only send packets when data or voice is being sent. As a result there is no penalty for long holding time of the virtual connections, and there is no impact on typical users of the network.

Members of the virtual direct connect can merely send voice and data at will without any set up delay since all the possible connections have been established in advance. The mesh arrangement could be permanent (re-established when the network or an endpoint is initialized) or the mesh arrangement could be established by the controlling computer at a given time of day. Likewise the controlling computer could monitor the network and re-establish connection for any phones that were hung-up or returned to service after a failure.

The phones could have a mechanism (Light, bell, and call waiting tone) to alert the user of an incoming message on a given virtual channel, or all channels could be tied to a speaker phone. Sensitive transmission (or all transmissions) could be encrypted by the phones to ensure privacy.

Hybrid Virtual Connections

The fully connected connection network presented above is one example from many possible live connection topologies that can be offered between end-points using this invention. Dynamic connection topologies can as well be provided using IP enabled call instances between a set of end-points. In one example, only the connections between parties matching a given (per party, or per group of parties) criteria are maintained by the dynamic mesh network. In a second example of hybrid configuration comprising a set of incoming POT lines from a central office (representing POTS customers) terminate on an IP telephony gateway and are then multi-connected via an IP (dynamic) mesh configuration to the IP end-points where operators are present in a local business. In other arrangements, existing circuit-based offices are mesh-connected via dialup IP telephony gateways offering long distance cross connections over the Internet or over a wide area broadband network (DTMF codes may be used by the POTS end-points to control the IP switch selection between the preestablished IP connections.)

One Touch Dealing Services

Advancements in end-point technologies such as IP enabled screen phones or Web phones providing high definition user interfaces that enable rapid and efficient monitoring by each end-user of over 100 virtual direct connections from a single phone device.

In a Web phone call monitoring example, a stock broker monitors (in real-time data) offers to buy or sell stocks, the most relevant offers for this particular trader are color coded and offer display of real-time data (quotes and offer values) within a touch sensitive box on the Web phone display screen. By simply touching one more boxes the broker is instantly in voice (and data) contact with the buyer and can rapidly complete a trading operation. This technology enables a wide variety of service enhancements derived from matching offerers

and buyers and grouping them by proximity clusters (or other algorithms) on the display screen. Each highlighted group of customers is ready to be conferenced- in via a single screen touch. The financial advantages of these "One Touch dealing" services make this technology attractive and widely applicable to commodity as well as information exchange institutions.

Advantages

The above network can provide immediate communications equivalent to circuit-based direct connect networks at a fraction of the cost of the special engineering and increased network equipment required to serve the silent holding time in a circuit-based solution. The mesh arrangement can be connected over any private or public packet network without special engineering or equipment provisioning.

Disadvantage

As with any packet network, there is the potential for lost packets. However, redundant solutions can be engineered where necessary at a fraction of the cost of circuit-based solution.

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